



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/622,044	07/16/2003	Mitsuru Kano	9281/4606	2263

7590 08/07/2006

Brinks Hofer Gilson & Lione  
P.O. Box 10395  
Chicago, IL 60610

EXAMINER

KIM, RICHARD H

ART UNIT	PAPER NUMBER
----------	--------------

2871

DATE MAILED: 08/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/622,044

Applicant(s)

KANO ET AL.

Examiner

Richard H. Kim

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 3-34 is/are pending in the application.
- 4a) Of the above claim(s) 5, 17, 27 and 28 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 21-25, 27, 29-31 is/are allowed.
- 6) ☒ Claim(s) 1, 3, 4, 6-16, 18-21 and 32-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 1, 3, 4, 6-12, 16, 19-20, and 30-34 rejected under 35 U.S.C. 103(a) as being unpatentable over Mitsui et al. (US 5,408,345) in view of Kobashi et al. (US 6,837,107 B2).

Referring to claims 1 and 4, Mitsui et al. discloses a device comprising an active matrix substrate comprising a plurality of scanning lines (39); a plurality of signal lines (32) intersecting the scanning lines, switching elements (40) provided near the respective intersections of the scanning lines and the signal lines, an insulating layer (42) covering the scanning lines, the signal lines and the switching elements, and pixel electrodes (38) electrically connected to the respective switching elements through multiple contact holes formed in the insulating layer (43), each of the pixel electrodes is a diffusively reflective electrode (38); a counter substrate (45) having a counter electrode (47) facing the pixel electrode (38); and a light modulating layer (49) held between the active matrix substrate (31) and the counter substrate (45). However, the reference does not disclose the device wherein the contact holes are masked in a plan view using a shielding layer on one of the active matrix substrate and the counter substrate.

Kobashi et al. discloses a device wherein the contact holes are masked in plan view using a shielding layer on the counter substrate (Fig. 5., ref. 23).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to mask the contact holes from plan view since one would be motivated to prevent light leakage between neighboring pixels.

Referring to claim 3, Mitsui et al. discloses a device wherein the insulating layer has light diffusion recesses, and each diffusively reflective electrode is disposed in each of the recess and has a shape conforming to each recess (Fig. 5, ref. 42).

Referring to claim 6, Mitsui et al. discloses a plurality of contact holes arranged in a length direction of one of the scanning lines and the signal lines (Fig. 6, ref. 43).

Referring to claim 7, Mitsui et al. discloses a device wherein each of the switching elements comprises a thin film transistor comprising a gate electrode extending from the corresponding scanning lines (Fig. 5, ref. 33), a source electrodes disposed on the gate insulating layer to extend from the corresponding signal line (Fig. 6, ref. 36), and a drain electrode electrically connected to the pixel electrode through the contact holes formed in the gate insulating layer (Fig. 6, ref. 37), and wherein the drain electrode has an extension extending from a portion positioned above the gate electrode toward one of a scanning line side and a signal line side so that the contact holes are connected to the extension (Fig. 5, ref. 37).

Referring to claim 8, Mitsui et al. discloses a device wherein at least one switching element comprises a thin film transistor (40), a gate electrode (36), and a drain electrode (37), the drain electrode has an extension extending from a portion of the drain electrodes positioned above the gate electrode, and the extension of the pixel electrode is connected to the drain electrode through multiple contact holes (43).

Referring to claim 9, Mitsui et al. discloses a device wherein the contact holes are aligned substantially along a direction of the scanning lines and the signal lines (43).

Referring to claim 10, Mitsui et al. discloses a device wherein the contact holes are adjacent to the scanning lines associated with at least one switching element (43).

Referring to claims 11, Mitsui et al. discloses a device comprising multiple contact holes aligned substantially along a direction of and adjacent to the scanning lines (43).

Referring to claim 12, Mitsui et al. discloses a device comprising at least one switching element comprising a thin film transistor (40), a gate electrode (33), and a drain electrode (37), the drain electrode has an extension extending from a portion of the drain electrode positioned above the gate electrode, the extension of the pixel electrode is connected to the drain electrode through the contact holes, and the contact hole is adjacent to the scanning line associated with the at least one switching element (43).

Referring to claim 19, Mitsui et al. discloses a device comprising an alignment film (44) contacting the pixel electrodes (38).

Referring to claim 20, Mitsui et al discloses a surface of the alignment film in contact with the light modulating layer is substantially planar (Fig. 5, ref. 44).

Referring to claim 32, Mitsui et al. discloses a device comprising an active matrix substrate (10) comprising a plurality of scanning lines (39), a plurality of signal lines intersecting the scanning lines (32), switching elements provided near the respective intersections of the scanning lines and the signal lines (40), and insulating layer (42) covering the scanning lines, the signal lines and the switching elements, and diffusively reflective pixel electrodes (38) electrically connected to the respective switching elements through contact holes (6b) formed in

Art Unit: 2871

the insulating layer, each pixel electrodes and switching element connected through a contact hole, each switching element comprising a thin film transistor (40), a gate electrode (33), and a drain electrode (37), the drain electrode has an extension extending from a portion positioned above the gate electrode, the extension of the drain electrode is connected to the pixel electrode through a contact hole (43), and the contact hole adjacent to the scanning line associated with the switching element; a counter substrate having a counter electrode facing the pixel electrodes (45); a light modulating layer (49) held between the active matrix substrate and the counter substrate; and a shielding layer provided between on one of the active matrix substrate.

However, the reference does not disclose the device wherein the contact holes are masked in a plan view using a shielding layer on one of the active matrix substrate and the counter substrate.

Kobashi et al. discloses a device wherein the contact holes are masked in plan view using a shielding layer on the counter substrate (Fig. 5., ref. 23).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to mask the contact holes from plan view since one would be motivated to prevent light leakage between neighboring pixels.

Referring to claims 33 and 34, Mitsui et al. discloses a device comprising multiple contact holes connecting each switching element with the associated pixel electrode, wherein the multiple contact holes are aligned substantially along a direction of the scanning lines (43).

Referring to claims 16, Mitsui et al. discloses a device comprising a color filter layer containing color filter (46). However, the reference fails to disclose a shielding layer formed in regions in which the color filters are not formed, the shielding layer masking the contact holes from plan view.

Art Unit: 2871

Kobashi et al. discloses a device wherein the contact holes are masked in plan view using a shielding layer on the counter substrate (Fig. 5., ref. 23).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to mask the contact holes from plan view since one would be motivated to prevent light leakage between neighboring pixels.

1. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mitsui et al. and Kobashi in view of Heguchi (US 6,292,237 B1).

Mitsui et al. and Kobashi disclose the device previously recited, but fails to disclose that the drain electrode is substantially L-shaped in plan view.

Heguchi discloses a drain electrode substantially L-shaped in plan view (Fig. 1, ref. 9).

It would have been obvious to one having ordinary skill in the art at the time the invention was made for the drain electrode to be substantially L-shaped in plan view since the portion of the generally L-shaped electrode extending over the gate line can serve as a cover for shielding stray light due to misalignment (col. 5, lines 17-19).

2. Claims 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitsui et al. and Kobashi in view of Ha et al. (US 6,697,138 B2).

Mitsui et al. and Kobashi disclose the device previously recited, but fails to disclose that the color filter is on a separate substrate than the shielding layer.

Ha et al. discloses a device wherein the color filter is on a separate substrate than the shielding layer (col. 3, lines 22-28),

Art Unit: 2871

It would have been obvious to one having ordinary skill in the art at the time the invention was made for the color filter to be on a separate substrate than the shielding layer since one would be motivated to increase luminance (col. 3, line 25).

***Allowable Subject Matter***

3. Claims 21-25, 27, 29-31 allowed.

4. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record fails to disclose an active matrix display device wherein each pixel electrode and switching element is connected through multiple contact holes.

***Response to Arguments***

5. Applicant's arguments filed 5/23/06 have been fully considered but they are not persuasive.

6. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, utilizing a black matrix or a light shielding layer in order to reduce light leakage



Art Unit: 2871

between pixels is extremely common. The fact the black matrix covers the hole from plain view would enable optimum light leakage protection.

7. In response to applicant's argument that Mitsui does not teach as extension extending from a portion of the drain electrode positioned above the gate electrode, the extension of the drain electrode connected to the pixel electrode through the contact hole, Examiner submits that Mitsui clearly shows the drain electrode (37) extending over the gate electrode (33) and that extension connected to the pixel electrode (38) through the contact hole (43). The contact hole (43) is adjacent to the scanning line (32).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard H. Kim whose telephone number is (571)272-2294. The examiner can normally be reached on 9:00-6:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571)272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2871

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Richard H Kim  
Examiner  
Art Unit 2871

RHK

  
ANDREW SCHECHTER  
PRIMARY EXAMINER